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Relationship between matching and assignment problems

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Abstract

Let (R ik) n i,k=1 and (J ik) n i,k=1 be preference matrices in the stable matching problem and let (J ik) n i,k=1 be the measure of the mutual antipathy in the assignment problem. In this paper we describe all functions f such that if H i,k = f(R ik, J ik), then for any matrices R and J solution sets in stable matching and assignment problems (partly) coincide. Thus we answer the question about the relationship between these problems stated by D. Knuth. The obtained results are analogous to the Arrow theorem, and the proof techniques are close to those used in the group choice theory. © Allerton Press, Inc., 2011.

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Keywords

Arrow theorem, Assignment problem, Group choice, Knuth problems, Preference matrix, Stable matching